APPENDIX F

Non-Fare Applications

APPENDIX F-1

King County Access & Identification Information

F-1.1 Building Access Systems

a) **General Government Buildings System** (at present: Courthouse, Administration Building, and Garage. In 1999: Yesler Building and remote sites: Ryerson Bus Base and Issaquah District Court):

GYYR Intelligent Controls Axxess 202 Software Program
BarLock Swipe & Insert Readers and Processors
3 of 9 Barcode Technology
Product Technical Information: **http://www.gyyr.com**
Note: In 1999, dependent upon funding, the above system will be upgraded to proximity readers using 26-bit chip technology

b) **Regional Justice Center, Kent** (Court Facility and Jail Facility):

APOLLO ASW-80 Alarm/Access Management Software Program
APOLLO proximity readers and controller-processors
26-bit proximity chip technology
Product Technical Information: **http://www.apollo-security.com**
Note: By the end of 1998, software will be upgraded to the APOLLO ASW-95 Software Program

c) **King Street Facility** (under construction; scheduled for occupancy in June, 1999):

Simplex NT3400 card access system, integrated into a complete facility management system including an ORCA energy management system
Intelligent System proximity readers and controller-processors
26-bit proximity chip technology

F-1.2 Identification Systems

a) **County-Wide System**

Software: Ximage ID-2000
A database using a graphical interface, working in conjunction with the County' s main JEM system used by law enforcement agencies including Adult Detention.
Product Technical Information: **http://www.iwsinc.com**

Cards: Motorola Indala Image 30 Proximity Card ISO-30
All cards are embedded with the 26-bit proximity chip for use in the proximity access systems. Cards are imprinted as a County ID with the following features added as necessary:

1. Bus Pass magnetic stripe and logos (will be phased out with RFCS implementation)
2. Barcode stripe (will be phased out in 1999)

Product Technical Information:
http://www.mot.com/LMPS/Indala/orderforms/image30.htm

APPENDIX F-2

Parking Revenue Collection System Specifications
Non-Fare Applications

SECTION 11155 - PARKING REVENUE COLLECTION SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.02 SUMMARY

A. This Section includes the provision of all material, labor, equipment, and services necessary to furnish and install fully integrated on-line, real-time PARKING REVENUE COLLECTION SYSTEM (PRCS) that will function in the manner described herein.
B. System Design: This system shall be an un-gated PRCS with the following subsystems:
   1. Revenue Control System (RCS): For parkers who pay for parking on each visit, multi-space meters (MSM) will be provided.
   2. Frequent Parker Program (FPP): Regular users who either prepay or prearrange for payment of parking as well as others authorized to park free in the facility will use monthly transit passes or pre-paid single transit passes to identify themselves to the MSM devices.
   3. Facility Management System (FMS): The FMS shall be a network consisting of servers, task or subsystem computers, and workstations that provide on-line monitoring and control of all MSM devices and vehicle count controllers.
   4. Vehicle Count System (VCS): The vehicle Count system shall be capable of providing independent and consolidated occupancy and activity counts for the facility.
   5. Enforcement System (ES): The ES will consist of an automated citation writing and reporting system.
C. The primary components of the integrated system shall include:
   1. FMS, including software, computers with related monitors, data storage devices and printers.
   2. MSM.
   3. FPP consisting of cards, central software, hardware and associated peripherals.
   4. VCS consisting of remote lane controllers and central software, hardware and associated peripherals.
   5. ES consisting of hand-held citation writing devices, central software, hardware and associated peripherals.
D. Additional components and accessories include:
   1. Vehicle detectors.
   2. Inductive loops.
   3. Lot full signs.
   4. Initial supply of operating stock items.
   5. Spare components and parts.
E. System Configuration
   1. Two MSM machines at the pedestrian bridge lobby on level two
   2. One MSM machine at elevator #3 on the Pedestrian Bridge.
   3. One MSM machine at the south west stair lobby #4 on level two.
   4. One MSM machine at the north east stair lobby #2 on level one.
   5. One MSM machine at the north west stair lobby #1 on level one.

6. The parking structure will be treated as one parking zone for occupancy and count purposes.
7. Office Equipment: PRCS central equipment including primary FMS server shall be located in the low voltage electrical room at the facility. Server and all task/subsystem controllers software and associated monitors, printers and other accessories shall be located in this area. Secondary FMS server shall be located in Customer Service Office on station platform. This space will be used by garage operations personnel to operate the system.
8. Parking Operations: A workstation shall be installed in Pierce Transit operations offices located at 3701 96th Street SW, Tacoma. The computer will be used for system administration, programming and consolidation of data from the FMS. Connection to the server shall be by remote dial up interface over dedicated phone lines. Provide Workstation with Facility Management System software and associated monitors, printers and other accessories.

F. List of Abbreviations:

ANSI	American National Standards Institute
DL	Detector Loop
ID	Identification
ES	Enforcement System
FPP	Frequent Parker Program
FMS	Facility Management System
LC	Local Controllers
MSM	Multi-Space-Meters
NEMA	National Electrical Manufacturing Association
NIC	Not in Contract
NIMH	Nickel Metal Hydride
NIS	Not in Service
PRCS	Parking Revenue Collection System
PIN	Personal Identification Number
RCS	Revenue Control System
RDI	Remote Dial-up Interface
UPS	Uninterruptable Power Supply
VCS	Vehicle Count System

G. Proposal Requirements:
1. Proposal Packages: The project will be procured as follows:
   a. Lump-sum proposal for furnishing and installation of complete PRCS as described herein.
2. Future System Expansion: The PRCS shall be easily expandable to accommodate additional parking facilities, features and configurations. The installed PRCS shall be capable of, but not limited to, the expansions/enhancements listed below:
   a. Add up to 6 additional MSM's within the facility
   b. An additional 800 space facility
   c. Upgrade system to accept contactless validation type "Smart Card" technology
   d. Upgrade system to accept Visa and/or Mastercard for payment of parking fees
   e. Upgrade system to accept credit, debit and/or declinating value cards for payment of parking fees
   f. Add up to 12 additional count control lanes
   g. Expansion of system network to include other facilities or remote lotsH. Work Included:

1. Fabricate, deliver, and install all new PRCS equipment as described in this Section.
2. Comply with all applicable codes and standards.
3. Review plans and specifications to be certain that all functional requirements, as described, can be achieved with the equipment to be supplied.
4. Provide Shop Drawings and product literature in accordance with Section 1.3.C and Division 1.
5. Coordinate final and precise layout of conduits, stubs, detector loops, bollards, and anchor bolts with those responsible for installation.
6. Provide and install all necessary device control wiring and communications wiring to equipment provided in this contract. Furnish and install all modems, electronics and communications equipment for communication network. Terminate and connect all communications cabling. Test, adjust and interface circuits prior to installation of PRCS equipment. Provide and install detector loops to be cut into paving at count control locations. Provide and install detectors and remote ramp/lane controllers for all loops. Make all connections of wiring to components.
7. Attend construction meetings, provide schedules as requested, and schedule field work which is to be coordinated with other trades.
8. Test equipment in accordance with Part 3 of these specifications.
9. Provide record drawings, operating manuals, maintenance manuals, spare parts, and training sessions as specified herein.
10. Remove and replace other construction as detailed on Drawings or as required for proper installation of PRCS.
11. Provide all new electrical conduit and power wiring shown on Drawings. Investigate the adequacy and quality of electrical power and provide all necessary power conditioning equipment.
12. Provide all new communications wiring and conduit required for Contractor's system architecture and design.

I. Work by Others:
1. All electrical power conduit and wiring as shown on the Contract Documents.
2. Phone line for modem data communication.
3. New construction of garage including, curbing, drainage, bollards, signage and pavement markings.

J. The following sections contain requirements that relate to this section:
1. Electrical work is specified in Division 16.

1.03 SUBMITTALS

A. General: Submit the following according to Conditions of Contract and Division 1 Specifications Sections.

B. Schedule: Contractor shall submit schedule of fabrication, delivery, installation, and testing within 15 days after award of contract. Update schedules at 30-day intervals.

C. Shop Drawings shall include:
1. Dimensioned drawings showing plans, elevations, sections and large-scale details indicating coordination and relationships with other construction.
2. Product literature for each component or product.
3. Wiring diagrams detailing power, signal and control systems, and differentiating clearly between wiring installed by manufacturer, installer and others.
4. Detailed information about the FMS software and associated hardware including:
a. Configuration diagram

b. Hardware specifications
c. Firmware specifications
d. Network topology including listing of all components of ISO layers
e. Software platforms and programming language
f. Communication protocol, polling procedures and transaction message flow from peripheral devices to and through FMS
g. Back-up procedures
h. Fault tolerance
i. Communication failure/error identification and recovery
j. Data storage and retrieval
k. Data export protocol and procedures

D. Samples: Submit samples of elements to be selected by Owner (including but not limited to paint finishes, citations cards, and standard reports) within 30 days after approval of the contract. Approval/selections will be returned to Contractor within 30 days of submittal.

E. Operating Documentation: Prior to the initiation of the field test and training, the Contractor shall deliver operations manuals, maintenance and administration manuals in the number as specified below:

1. Enforcement Officer Manual - This manual is designed for the Enforcement Officer and shall explain all the features and functions of the PRCS for day-to-day operation such as, log-on/off, operating the MSM (printing out enforcement tour list, assist patrons in processing normal and exception transactions etc., entering citation number and data) and the ES. The manual shall also have a section which would enable the Officer to resolve common operating problems which are accessible (e.g., change receipt paper) and contain instructions on how to perform normal maintenance. Two copies of this manual shall be provided plus one reproducible original.
2. Supervisor Manual - This manual is designed for the Supervisor or authorized individual for day-to-day operation of all specified software package(s). It shall explain all the features and functions (e.g., log-on/off, monitors, prepare and print standard and ad hoc reports) required for day-to-day management. The manual shall also have a section for problems and/or exception conditions so the Supervisor can resolve common operating problems. The manual shall also contain instructions on how to operate the MSM, perform normal maintenance (e.g., changing paper for the printer) and collect revenues from the machines. Two copies of this manual shall be provided plus one reproducible original.
3. Maintenance Manual - This manual shall contain detailed instructions on how to perform regular and preventive maintenance on all components of the PRCS and communications network which can be performed by Owner's staff. Two copies of this manual shall be provided. The manual shall include:
    a. Description of unit and component parts, including complete nomenclature and commercial number of all replaceable parts.
    b. Operating procedures: Include start-up; break-in; routine and normal operating instruction; regulation, control, stopping, shut-down and emergency instructions; and special operating instructions as applicable.
    c. Maintenance procedures: Include routine operations; guide to trouble shooting; servicing schedule; description of sequence of operation; as-installed control diagrams; as-installed color coded piping and wiring diagrams; and a list of spare parts and recommended quantities to be maintained in storage on-site.
    d. Include trouble shooting guide for repairs which can be performed by Owner's staff.

e. Include manufacturer's product data with each sheet annotated to clearly identify the data applicable to the installation and delete references to inapplicable information.

f. Supplement product data with drawings as necessary to clearly illustrate relations of component parts of equipment and systems.

g. Include copy of each manufacturer's warranty and give information sheet for proper procedures in the event of failure and instances which may affect the validity of warranties.

4. System Administration Manual - This manual shall contain all procedures necessary for the proper monitoring and administration of the PRCS as might be required by the Owner's parking manager. At a minimum, the manual shall contain separate sections that cover the following topics: day-to-day operations, modification of field programmable settings, back-up and recovery, audit and control procedures, report production, contingency plans, configuration control, and system diagnostics. A separate, removable section of the System Administration manual shall contain information on the proper administration and control of the security features built into the system. Some of the information to be contained in this section include: maintenance of user identifiers, password control, rule maintenance and security policy review. Two copies of this manual shall be provided.

F. Record Drawings: Provide the Owner with a reproducible set of drawings and a CAD file in Autocad Release 12 format showing any modifications or clarifications not present on original Contract Drawings including the actual equipment field wiring diagram and electrical circuitry and service schematics.

G. The Contractor shall also deliver to the Owner original copies of all licenses, registrations, documentation, disks and other media as may have been included with those commercially available software packages provided with the system. In addition, the Contractor shall ensure that all licenses, registrations and warranties have been transferred to the Owner prior to final software turnover.

H. At least one month prior to the scheduled training sessions, the Contractor shall deliver a Training Plan which shall include at a minimum:

1. A description of all training courses including identification of the instructional outcome, duration of the course, type of presentations (lectures, labs) and identification of the facility and training equipment requirements (e.g., lecterns, overhead projectors, TVs, VCR, PRCS hardware elements).

2. A list of instructors who shall conduct the training and a description of their skills, experience and qualifications.

3. Individual course curricula, course materials, manuals, study guides and work books.

4. Course critique and evaluation forms for students.

I. Testing Plan and Documentation: Provide a test plan for review and approval by Owner and Engineer 30 days prior to start of first test. The plan shall include demonstrations of compliance with specifications, contractual compliance, definitions of all test objectives, participant responsibilities, documentation for tests, and procedures for dealing with failures during test. Provide 3 copies of checklists which detail tests for every functional requirement of the MSM, FPP, ES, and FMS, specified supplies/spare parts, training, operating and maintenance manuals and provide space for sign-offs by Contractor and Owner's Representative.

1.04 QUALITY ASSURANCE

A. Allow Owner and/or its Representative(s) free access to facility(s) at any time to observe the installation process.
B. Provide 7 days notice to the Owner and Engineer to review completed installation prior to acceptance testing.
C. Provide equipment incorporating features which minimize maintenance and meet the following maintainability requirements:
    1. Provide for ease of performance verification and failure detection while minimizing effort required for adjustment.
    2. Provide unobstructed access to equipment components.
    3. Minimize requirements for special tools and test equipment.
    4. Provide for easy removal and replacement of components.
D. Provide a system and components which have a service life of 10 years and specify periodic maintenance requirements in the maintenance manual to meet that life expectancy.
E. If the Contractor elects to integrate components from different manufacturers, the Contractor shall be responsible for insuring that all specified features are provided and fully operating when system is turned over to Owner for testing and acceptance.
F. The Contractor shall be responsible for all software and insure that communications are properly received and sent by all computers and peripheral devices.

1.05 QUALIFICATIONS

A. Contractor/Installer shall:
    1. Have continuously worked successfully with equipment manufacturer for minimum of three years.
    2. Be approved in writing by PRCS manufacturer(s).
    3. Have a manufacturer approved equipment service center in sufficient proximity to respond on-site to service calls within 4 hours, Monday through Friday.

1.06 DELIVERY, STORAGE AND HANDLING

A. The Contractor shall assume care, custody and control of all PRCS equipment and components; replace damaged materials at no cost to Owner; deliver equipment to site packaged to prevent damage and marked for easy identification; and store equipment in original containers in clean, dry location designated by General Contractor or Owner and agreed to by the PRCS Contractor.

1.07 TIME OF COMPLETION

A. Contractor shall coordinate installation and testing of equipment so that Owner may begin operation of PRCS at time parking facility is opened to public for use on October 15, 1997. First 30 days of operation after opening of new facility will constitute test period as described in Part 3 of this Specification.
B. Well coordinated and controlled installation of the PRCS is essential to this Contract. Therefore all equipment must be ready for rapid, coordinated installation. Contractor shall coordinate installations and testing of equipment in a manner acceptable to Owner/Operator. First 30 days of operations after Substantial Completion will constitute operational cycle as described in Part 3 of this Specification.

1.08 WARRANTY

A. General: Contractor shall warrant equipment and installation (100 percent parts and labor) for period of one year from date of final acceptance by Owner. The system shall be maintained and serviced against any and all malfunctions due to manufacturing or installation defects at no cost to Owner during warranty period. Maintenance shall include preventive maintenance per manufacturer's recommendations, or as necessary to keep equipment in good working order. Contractor shall be responsible for performing all maintenance and repair during the warranty period, including all preventive maintenance and minor repair tasks. Software support shall also be provided during warranty period. Contractor shall keep a log of all maintenance, preventive maintenance and repair work performed under warranty to be give to Owner at the end of the warranty period.

B. Warranty Period: Warranty period shall begin after Contractor has demonstrated satisfactory performance of completed PRCS as specified in Part 3, "Operational and Test Cycle".

C. Response: Warranty response period is to be 5 days per week, 12 hours per day excluding holidays. Response time from initiation of trouble call to on-site response of qualified service technician must not exceed 4 hours.

D. Repair: Contractor shall repair or replace all defective or damaged items delivered under contract by end of calendar day following day on which notice was given by Owner or its agent. Contractor may elect to have any replaced item returned to manufacturer at no additional expense to Owner. If Contractor is not available, Owner/operator personnel may effect repairs. Contractor shall then reimburse Owner for parts and labor necessary to correct deficiencies as defined within warranty clause and time. Contractor shall pre-qualify appropriate Owner/ Operator personnel to effect repairs and identify the types of repair each trained individual is qualified to perform after training of owner personnel.

E. Limitations: Warranty shall not cover acts of vandalism, damage caused by third party, or natural phenomena.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS OF PRIMARY COMPONENTS

A. Acceptable manufacturers for any and all primary components shall meet following requirements:
   1. Manufacturer must have been continuously in operation for past five years.
   2. Manufacturer shall have current version of each primary component currently operating successfully in five or more parking facilities of similar size and activity.
   3. If all components of PRCS are not from same manufacturer, Contractor shall be responsible for the performance of these components, as they relate to the proper functioning of system as required herein.
   4. Manufacturer must be able to demonstrate successful performance of the proposed system and equipment. Proof of successful performance shall be submitted in accordance with paragraph 1.2.H.3.d.

B. The following manufacturers have previously submitted material documenting the ability to meet paragraph 2.1.A and are pre-approved on this Project; submittal of additional qualifications material for components meeting 2.1.A shall be waived. Pre-approved of any manufacturer does not release Contractor from meeting any and all requirements of these Specifications. Manufacturers not listed may propose but must submit with proposal material fully documenting conformance to paragraph A. The following manufacturers provide primary components which substantially meet or exceed the requirements stated in this specification. They are listed to provide a benchmark for other manufacturers which may wish to propose their products.
   1. MSM and FMS Software
      a. Digital Pioneer Technologies
      b. Duncan
      c. Hamilton
      d. Park-Ur-Self/Ventek
      e. Traffic and Safety
      f. Schlumberger
   2. Enforcement System

a. Cardinal
b. Clancy
c. Complus
d. Dap Technologies
e. Duncan Management Solutions
f. Enforcement Technologies
g. Radix
h. Telxon

3. Vehicle Count System
   a. Federal APD
   b. McGann
   c. Parking Automation
   d. Parking Systems and Analysis
   e. Parking Technologies
4. Bill Changer
   a. Hamilton
   b. Duncan

2.02 PROJECT SITE CONDITIONS

A. PRCS components shall operate dependably within environmental conditions indigenous to Tacoma, Washington. Components located in a 24 hour climate controlled office shall be capable of normal performance in a business environment. Other equipment shall be capable of operating in the temperature extremes of the geographic area stated. Special electrical power and grounding.
   1. Furnish and install on-line, regulating computer grade uninterruptable power supply (UPS) for:
      a. Servers and task computers (system controllers) with 30 minutes of back-up battery power.
      b. Work stations and MSM with 15 minutes of back-up battery power.
   2. Owner will provide "clean" power which for the purposes of this Project shall be defined as 115 VAC +/- 10% and 60 Hz from circuits dedicated to the PRCS. Contractor shall provide any additional power conditioning required for the operation of the system as described herein.
   3. Provide dust and noise protection in strict accordance with equipment manufacturer's recommendations.
   4. Equipment layout shall be in strict accordance with manufacturer's recommendations to allow proper movement of air through and around equipment.

2.03 EQUIPMENT REQUIREMENTS

A. Provide complete operational parking system with all necessary components. It is the PRCS Contractor's SOLE RESPONSIBILITY to provide every component necessary for a complete functioning system.
B. See Contract Drawings for MSM layout.
C. Provide Owner with two sets of keys for each piece of equipment with locks and two sets of master keys. Keys shall be unique to this parking equipment: they shall not fit any other equipment in same city or metropolitan area.

D. Spare Components: Furnish the following spare components, complete and ready to use, prior to commencement of operational testing and maintain inventory of spare components at this level as components are used during warranty period. After expiration of warranty period, Owner will pay for replacement of parts as used from this inventory.

1. MSM:
   a. One controller
   b. One receipt printer unit
   c. One card reader head
   d. One note acceptor
2. One each communication/port controller
3. One each local/remote lane controller
4. One each vehicle detector and inductive loop
5. One intercom remote station
6. Two Relays for count and lane monitoring
7. One circuit board for each primary component

E. Stock: Furnish the following operating stock items prior to commencement of operational testing. Contractor must provide samples for Owner approval prior to final order of any item that is custom printed. Actual size of citations shall be selected by the manufacturer. The color and art work of FPP ID must be approved by Owner. Owner will provide camera-ready art work for logos.
   1. 100,000 citations printed to Owner's specifications
   2. 200 rolls receipt paper for each MSM
   3. 3 spare ribbons for each printer requiring ribbon
   4. Two additional removable locking coin vaults for each MSM and bill changer
   5. Two additional removable locking bill vaults for each MSM and bill changer

2.04 PERFORMANCE SPECIFICATIONS

A. Primary components of PRCS shall meet following specifications:
   1. MSM shall be microprocessor controlled, in on-line, real-time communication with the FMS.
   2. Each MSM shall communicate the complete transaction log to the FMS. In the event of communication failure with the FMS the devices shall continue to operate in off-line mode and shall store a minimum of 400 transactions, or have sufficient system redundancy, to insure availability of the transaction data upon restoration of the FMS. In the event of failure during communication an error checking and recovery program shall be employed to prevent corruption of data files.
   3. All field programmable functions of each device shall be reprogrammed from the FMS (pass-word protected), and any and all reprogramming changes shall be reported to the daily log.
   4. All devices shall have compatible communication ports with selectable baud rates for all communications and connections to all computer hardware.
   5. Primary components shall incorporate a crystal controlled time clock/calendar which is updated at least once daily by the FMS. The clock shall keep military time and be accurate to at least one minute per month.
   6. All devices shall be ergonomically designed for ease of use by patrons including the disabled.
   7. Cabinets shall be fabricated of a material that is strong and durable such as, but not limited to, composite, stainless steel, aluminum alloy, or welded 12-gauge steel. The mounting holes shall only be accessible from the inside of the cabinet. All surfaces shall be corrosion resistant and the exterior of cabinet shall be finished in a color chosen by Owner. Cabinets shall have hinged external doors.

8. Internal components shall be modular and plugged for easy maintenance and replacement.
9. Control logic and communication relays shall be provided for required counts.
10. Corrosion resistant connection boxes shall be provided for all wiring connections.

B. Multi-Space Meters:
1. Operational Description
a. Public Usage by cash parkers: Each MSM machine shall enable patron to key in parking space number by pushing the appropriate keys on the machine. Each machine shall be capable of accepting payment of parking fee for any space within the system. Machine shall accept payment of parking fees by coin or bill. As each coin or bill is inserted into machine, machine shall calculate and display parking time paid for. Machine shall issue a receipt of the specified size and format for parking fee paid upon pressing of receipt button by patron. Receipt shall include a unique PIN number. Machine shall have a memory system which stores data from each transaction, including space number, amount paid, and time purchased. Patrons can return to machine and pay for additional time by entering space number and PIN number from receipt.
b. Use by Transit Patrons (FPP):
1) PRCS shall recognize monthly transit passes when inserted into a reader on the MSM, and shall credit the designated space number entered by the patron with an all day parking validation. The system shall record this transaction as a monthly transit validation, along with the pass number, space number, date and time of entry. PRCS shall not accept same monthly pass for validation on another space in facility until time on current validation has expired. MSM shall dispense upon request a receipt for transaction and shall return monthly pass to patron. If monthly transit pass is not-authorized, machine shall request cash payment.
2) PRCS shall recognize and accept as payment pre-paid single use bus transit passes when inserted into a magnetic stripe reader on the MSM, and shall credit the designated space number entered by the patron with an all day parking validation. The MSM shall electronically void the pre-paid pass and print on it the date, time, unique transaction number, space number and amount, and then transport the pass to a secure vault within the MSM. The MSM shall issue to the patron a receipt of the specified size and form that may be used as a fare instrument for boarding Pierce Transit busses, and printed with the date, parking space number and validation amount as specified herein (Exhibit A, p. 11155-27).
3) The PRCS shall have the capability of being upgraded to accept "Smart Cards" as payment for parking in the facility. "Contactless Smart Card" transactions shall operate in the same manner as monthly transit passes.
4) Machine shall check pass validity for use at this date and time and if authorized complete transaction.
c. Enforcement: Upon insertion of key and/or PIN in machine by enforcement officer, machine shall print out a violation report showing spaces that are unpaid and the time elapsed since the space was last paid for. After enforcement tour, attendant will electronically off load citation number and space number into FMS via MSM machine.
d. Citation payment: Machines shall be capable of accepting payment for parking

citations. Upon entering of citation number in machine by patron, machine shall calculate and display the citation amount due. Machine shall issue receipt for payment of citation upon pressing of receipt button by patron. Payment of citation shall be reported to FMS.

2. Machine shall contain concise customer instructions for user friendly operation. The machine shall have an easily readable alpha numeric display to communicate messages to user. The operating procedure shall generally progress from left to right and top to bottom; corresponding instructions shall be numbered and shall be pictorially illustrated. Messages displayed at changeable message indicator shall be instructional phrases such as; Enter Space Number, Time Bought, Please Take Receipt, Please Wait While Receipt is Printing, Thank you.
3. Machines shall conform with the Americans with Disabilities Act accessibility guidelines for automated teller machines, August 1992 except that requirements related to persons with vision impairments need not be met.
4. Machine shall be capable of recognizing user errors, such as invalid space number, and shall provide guidance to user via display on machine.
5. The rate structure shall be programmable only from the FMS, with the ability to accommodate the following:
    a. At least six fee structures each of which has three rate increments or blocks for each of up to 60 fee segments. Each block is an amount to be charged, duration for that charge and number of times that duration and charge is to be repeated over each 24 hour period of stay.
    b. Automatic adjustment for daylight savings time and leap year in fee calculations.
    c. Year 2000 compliant.
    d. Multiple day stays with 24 hour maximums.
    e. Grace time.
    f. Differential daytime, evening weekend and holiday rates.
    g. Special event rates.
6. Fee structure shall be initially set up by Contractor to Owner's requirements. Machine shall accept coins and bills for payment of parking fees. Coins shall be accepted in nickel, dime, quarter and Susan B. Anthony dollar denominations (United States currency only). Both one (1) and five (5) dollar bills (United States currency only) shall be accepted.

7. Machine shall be equipped with separate coin and bill vaults. Both vaults shall be removable and locking, and shall be keyed differently than other machine locks such that access to money in vaults is not available when vaults are removed. Coin vault shall be a minimum of 7 gauge in thickness and shall have a storage capacity of $1,000. Machine shall have capability to stack bills in vault. Bill vault shall have capacity to store 2,000 bills. Each vault shall have a separate identification number.
8. Non-Cash Payment Options (Future Upgrade): The MSM shall be upgradable to accept and process the following non-cash payment options: credit card, debit cards and declinating value.
    a. Each MSM shall be equipped (internal or external to the machine) with a magnetic stripe swipe reader used for processing credit card transactions. A separate but connected device is acceptable. Credit card transactions shall accommodate as a minimum:
        1) VISA

2) Master Card
3) Checking Account Debit Cards

b. MSM and/or FMS shall communicate with a central credit card processor which shall be connected via a modem to a leased telephone line. The telephone line shall be linked to a credit card clearinghouse. Authorization for credit card transactions from swipe to authorization shall not be greater than 10 seconds. Contractor shall be responsible for confirming the record formats required by the Owner's financial institution which is to be determined.

9. Receipt shall be issued upon customer request by pressing receipt button. Receipts shall conform to the size and format specified in Exhibit A (p. 11155-27) to enable them to be used as a bus fare instrument and fit into the fare box. Information printed on receipt by MSM shall include date and time issued, space number, amount of money deposited (or pre-paid transit pass used), expiration time, and PIN. Information printed by MSM shall conform to specified format. Printer shall dispense a minimum of 12,000 receipts per roll of paper. Size of receipts shall be 2-1/2" wide by 4-3/4" long.
10. Machine shall be capable of accepting payment for citations issued. System shall be capable of computing and displaying amount due and for each citation using one or both of the following methods:
    a. Applying a programmable factor to time not paid for.
    b. Applying a programmable fixed amount.
11. Each machine shall be capable of controlling a minimum of 2,000 parking spaces.
12. Upon completion of each transaction, machine shall communicate transactions throughout the system and to central computer. Transactions reported shall include payment of citations issued for violations. Each transaction shall be identified by machine number and transaction number.
13. Machine shall recognize a transaction as completed if any one of the following occurs:
    a. Forty (40) seconds has elapsed since the last bill or coin was inserted
    b. The receipt button is pressed
    c. A new space number is keyed into the machine
14. Machine shall contain locking system and appropriate alarm contacts to monitor for tampering. Machine shall be furnished and installed with locking anti-tamper devices to prevent unauthorized disconnection of both power and communications wiring connections.
15. Each machine shall monitor critical machine functions and transmit alarms to FMS. Functions monitored shall include low paper, low battery, coin jam, bill jam, coin vault full, bill vault full, A.C. power off, door open, door closed, tampering and door forcements.
16. Machine shall be capable of performing a self-diagnostic routine at programmable times or intervals. Self-diagnostic routine shall verify that machine functions are working properly. Functions to be checked shall include, but not be limited to, accuracy of fee calculation, clock, and coin and bill recognition. System shall be capable of producing a printout documenting the results of the diagnostic routine.
17. Machine shall dispense printed revenue report with current totals, grand totals, transaction distribution totals, and number of users. Reports shall be available from both dollar unit and coin unit.
18. Upon insertion of key in machine by enforcement officer, machine shall print out a violation report showing unpaid spaces and associated time in violation. If all machines are not communicating for any reason, violation reports shall not be issued to prevent

citing paying customers. Machine shall allow printout of violation report encompassing up to 200 spaces. Space numbers included in violation report shall be programmable from central computer or each machine.

19. MSM machine shall have minimum accuracies of:
    a. Fee calculation accuracy: 99.9%
    b. Data transmission error rates: Less than one message retransmission per hour. Data received and accepted by FMS as valid must have 99.9% accuracy.
    c. Clock accuracy -- one minute per month.

20. Timing: System shall meet the following time performance requirements:
    a. Elapsed time from time that bill or coin is accepted until time purchased is displayed shall not exceed 1.5 seconds.
    b. Elapsed time from time that receipt button is pressed until receipt is issued shall not exceed 3 seconds.

C. Bill Changer
1. Machine shall accept five, ten, and twenty dollar notes and dispense change in quarters and one and five dollar bills. Changer shall be a minimum of 7 gauge in thickness and shall have the capacity to accept a minimum of 1,000 bills. Changer shall provide change in the following denominations:
    a. Accept one dollar bill - dispense four quarters.
    b. Accept five dollar bill - dispense five one dollar bills.
    c. Accept ten dollar bill - dispense two five dollar bills
    d. Accept twenty dollar bill - dispense four five dollar bills
2. Machine shall contain concise customer instructions for user friendly operation.
3. Machines shall conform with the Americans with Disabilities Act accessibility guidelines for automated teller machines, August 1992 except that requirements related to persons with vision impairments need not be met.
4. Machine shall accept bills in one (1), five (5), ten (10) and twenty (20) dollar denominations (United States currency only).
5. Machine shall be equipped with separate coin and bill vaults. Both vaults shall be removable and locking, and shall be keyed differently than other machine locks such that access to money in vaults is not available when vaults are removed. Coin vault shall be a minimum of 7 gauge in thickness and shall have a storage capacity of $1,000. Machine shall have capability to stack bills in vault. Bill vault shall have capacity to store 2,000 bills. Each vault shall have a separate identification number.

D. FPP Software
1. The FPP shall be an on-line, computer-based system for those authorized by Owner to have access to the parking facility without paying cash on every visit. Distributive, networked or centralized processing may be employed. The FPP software may be integrated to FMS or separate but in on-line real time communication. The system shall control access for the following distinct user groups:
    a. Owner or other vehicles allowed to park free of charge in the parking facilities.
    b. Monthly parkers who purchase monthly transit passes which are also valid for parking on a monthly basis.
    c. Frequent parkers, who pre-purchase single use transit passes which are also valid for parking on the date of transit use.
2. The system shall:
    a. Individually recognize and process at least 30,000 FPP users at all MSM locations.
    b. Have at least 16 preprogrammed access levels. Access level of ID shall be capable of being changed without reprogramming of FPP. User capacity shall not be lost due to changes to FPP programming and access levels.
    c. Link users to each other to allow one entity to be identified with and/or pay for a group of users. Up to 100 such FPP groups shall be provided.
    d. Error checking communications protocol shall not allow partial ID numbers to be transmitted to FPP controller(s).
3. The central FPP controller, independently or in concert with the FMS, shall:

a. Issue and reprogram ID devices.

b. Allow the authorized supervisor to create, store, send and receive user programming from the FPP readers. Access to programming shall be password protected, with multiple levels of access. The system shall have password-protected access to any and all information regarding specific blocks and/or suites of cards.

c. Provide a data base for FPP management, including the following:

1) Provide up to 20 record fields on each FPP parker. Record fields may include, but not be limited to:

a) ID Number
b) User Name
c) Billing Address
d) Work Phone
e) Home Phone
f) Primary vehicle license plate number
g) Secondary vehicle license plate number
h) Access group (coded numbers may be used)
i) Access level (coded numbers may be used)
j) Billing group (specifying type/rate; coded numbers may be used)
k) Date first issued
l) Expiration date
m) Current FPP status
n) Date record last changed (automatically entered when changed)
o) Last changed by (coded numbers may be used)
p) Current account payment status (declinating balance, month to date billing or credit card charges outstanding.)

2) Allow specific parker record files to be retrieved, displayed and/or printed based on selectable criteria, such as current FPP status, access group, access level, and/or ID numbers (except data which is password protected.)

3) Allow sorting and printing of the data base for routine and special forms such as invoices or mass-mailings.

4) Monitor and estimate counts of FPP holders present on hourly basis by group, lot and total occupancy. Track occupancy and report peak occupancy during each hour to FMS. Provide reports to show daily and/or weekly peak occupancy by access level, group and lot.

d. The system shall be capable of the collection of fees from parkers on monthly prepayment, declinating, decrementing, end of month billing, and/or credit card basis. The fee schedule for FPP parkers shall be the same as or discounted from the schedule employed for RCS parkers. If not otherwise generated by the FMS, the system shall monitor and report revenue associated with the FPP system to FMS. The system shall provide for positive posting of payments and automatic lock-out of FPP users within programmable grace period after expiration of a prepaid monthly account.

e. The system shall issue billing invoices for monthly accounts as well as separate corporate billing invoices.

f. The system shall provide a credit card billing interface to allow automated credit card billing for those electing that payment option. The credit card number shall be "on file" rather than swiped for each transaction.

g. An Accounts Receivable function must handle all normal accounting functions such as aged trial balance, aged trial balance by responsible collection agent, statements, mailing labels, cash receipts journals, adjustment journals, customer ledgers showing account detail (payments and invoices), general ledger journal, etc. Violations will be presented by vehicle on a separate report. Efficient monitoring of Accounts Receivables shall be provided through a series of management and audit reports.

h. The system shall provide automatic on-line real-time monitoring of FPP usage with storage of transaction data from current line available for on-line retrieval and previous year on tape or other accessible media for audit and analytic purposes.

i. The system shall allow the user with appropriate password to change rate structures.

j. The system shall have the capability of monitoring and reporting of alarm conditions to the FMS.

k. The system shall have the ability to register and utilize compatible foreign ID devices in FPP just as if they were issued by Owner.

l. All administrative actions shall be password protected and report to the FMS in the daily log.

4. Readers shall be designed for exterior use in access and security settings of high volume. Readers shall be weatherproof, and shall operate optimally under all environmental conditions such as precipitation, vibration, snow, ice, dirt and/or extreme heat or cold.

5. Operational Description:

a. Adjustable to read one to three standard tracks according to American Banking Association (ABA) Standards.

b. Read ABA magnetic bar codes.

c. The reader identifies that an ID device has been presented to the reader. The validity of the user for current authorization in this system shall be checked through the FPP Controller and, if approved, a message sent to the MSM indicating a valid ID.

d. Activation of the reader shall automatically disable the cash operation. Initiation of an cash transaction shall automatically disable the FPP reader.

e. Declinating Users (Future Upgrade): When a declinating user's ID is presented, the MSM shall ask the patron to select the amount of parking time to be provided, display it on the fee indicator, deduct the fee from the balance, display the payment balance, and reset with the new balance. If the balance on the declinating account is not sufficient to cover the fee due, the system shall display the fee due and inform the patron that the balance is insufficient. The patron shall then have the option of simply paying the insufficiency or increasing the balance to an authorized level allowing future visits. The system shall recognize when the decrementing visit expires and thereafter include the user on the violation report.

f. Decrementing Users (Future Upgrade): When a decrementing user ID is presented to the reader, the system shall check the account and determine if the user is authorized for this date and time. If so, the system shall deduct this visit from the balance, and display the new balance. If the visit is not authorized, the system shall display the fee due and inform the patron of the reason for denial. The patron shall then have the option of simply paying the insufficiency or increasing the balance to an authorized level allowing future visits. Decrementing users only

authorized parking for specific dates or times must go to the facility office to purchase additional visits. The system shall recognize when the decrementing visit expires and thereafter include the user on the violation report.

g. Contactless Smart Card (Future Upgrade): Pierce Transit plans to participate in the implementation of a regional fare coordination project using a contactless smart card as the payment medium. Implementation will commence in 1999 and full roll out of the system is expected by the end of the year 2000. When implemented in Pierce Transit's operations, the regional fare card will be used to pay for parking at the Tacoma Dome parking garage, either through deduction of the payment from the stored value on the card or through confirmation that it will by physically or electronically feasible to retrofit the smart card transaction processing device into the pay on foot vending equipment that is the subject of this RFP. The smart card transaction processor should be installed in the front face of the vending machine and integrated into the vending equipment controller via a non proprietary open interface. The vendor will provide to Pierce Transit and the regional fare card equipment vendor a royalty free license to the pay on foot vending controller software required to implement this interface.

h. If the FPP ID is not valid for the system or is not authorized for entry at that location and/or at that time, the FPP controller will send an invalid user attempt message to the FMS system. The invalid user attempt shall also be posted to the daily exception transaction log.

E. Vehicle Detectors: Vehicle detectors shall be intelligent detectors with directional logic. The detectors shall contain microprocessor logic to differentiate direction of traffic flow, and can send a violation alert signal when a vehicle travels through the lane in the wrong direction. Detectors shall:

1. Automatically maintain peak sensitivity regardless of rain, snow or other environmental conditions. Different sensitivity settings shall be provided to allow tailgating vehicles of varying height and size to be optimally detected.
2. Fit within remote lane/ramp controller.
3. Have a light on front panel to indicate presence of vehicle.
4. Modular plug-in construction or built in, and easily serviced.
5. Be self-tuning and self-compensating, and tune to its loop environment, rather than relying upon conditioning to crystal controlled frequencies. Analog detectors which require periodic manual tuning are not acceptable.
6. Require no tools or meters for setting unit which is completely automatic except for initial settings.
7. Have a three-position frequency switch. No two frequencies shall be the same, to prevent crosstalk or interference between loops in proximity of each other.

F. Inductive Loops: Inductive loops shall be cut-in to supported slabs and paving surface:

1. Be formed by three to four turns of 16 gauge single-conductor wire.
2. Not be spliced.
3. Have loop leads which are:
   a. Limited to a length of 100 feet.
   b. Have a four twist minimum per foot and located at a minimum of 18 inches from electrical power lines.
   c. Be contained in separate conduit to prevent interference from electrical signals.
   d. Cut-in loops shall be placed in sawcuts ½" wide and ¾" deep into paving surface and filled with sealant approved by Engineer.

G. Facility Management System:

1. The Facility Management System (FMS) shall be a software package operating on a network of computers and/or servers that provide on-line monitoring and control of all PRCS equipment. FMS system shall include individual and multiple software packages capable of running concurrently with other active programs under control of operating system.
2. The FMS shall be configured with two subsystems. Each subsystem shall be password protected to restrict access to individual functions of each subsystem to authorized users. The subsystems are:
   a. Revenue Reporting
   b. Equipment Functions
3. The Revenue Reporting/Control Subsystem shall accomplish the following tasks from any workstation in the FMS, with appropriate password:
   a. Remote programming of MSM payment stations.
   b. Test fee structure against existing facility usage statistics.
   c. Uploading and consolidating reports from payment stations.
   d. Retrieval and review of individual transactions. Retrieval shall be based upon user defined parameters. Reports shall be displayed on a monitor, printed on a printer, and/or converted to a fixed length record, delimited ASCII or SQL database file.
   e. Consolidating and retaining data that allow for report generation. The following are the minimum required reports. The reports shall be either viewed on a work station monitor or printed.
   f. The following reports shall be provided:

1)

Name:	Daily Event Log
Report Frequency:	Continuous
Listing Sequence:	Real Time
Source:	Exceptions, status, changes to system
Purpose:	Auditing of unusual activity, monitor functional activity, monitor management activity

2)

Name:	Enforcement Officer Shift Report
Report Frequency:	Automatic at end of shift, or on request
Listing Sequence:	Chronological
Source:	Shift Summary
Purpose:	Operational auditing, individual audits

3)

Name:	Cash Collection Shift Report
Report Frequency:	Automatic at end of shift, or on request
Listing Sequence:	Chronological
Source:	Shift Summary
Purpose:	Operational auditing, individual audits, cash deposit verification

4)

Name:	Daily Revenue Report
Report Frequency:	Automatic at end of shift, or on request

Listing Sequence:	Chronological
Source:	Shift Summary
Purpose:	Operational auditing, individual audits, cash deposit verification

5)

Name:	Daily Activity Report
Report Frequency:	Automatic at end of shift, or on request
Listing Sequence:	Chronological
Source:	Shift Summary
Purpose:	Operational auditing, individual audits, cash deposit verification

6)

Name:	Daily non-revenue and void transactions
Report Frequency:	Automatic at end of day
Listing Sequence:	Plate number/entry-exit time
Source:	Non-revenue transactions
Purpose:	Performance auditing, statistical information

7)

Name:	Cash Deposit Summary
Report Frequency:	On request
Listing Sequence:	Date
Source:	Daily report plus input data
Purpose:	Summary totals, Deposit record, Auditing

8)

Name:	Monthly Cash Collection Report
Report Frequency:	On request or at the end of the month
Listing Sequence:	Cashier/date
Source:	Daily lane activity
Purpose:	Adding, performance evaluation, Individual auditing, statistical information

9)

Name:	Monthly Revenue Report
Report Frequency:	Automatically at end of month or on request
Listing Sequence:	Lane
Source:	Accumulation of Daily Lane Activity Reports
Purpose:	Auditing, management planning

10)

Name:	Monthly Activity Report
Report Frequency:	Automatic at end of month or on request
Listing Sequence:	Date
Source:	Activity status entry & exit counts
Purpose:	Management planning, statistical information

11)

Name:	Monthly Duration Report
Report Frequency:	Automatic at end of month or on request
Listing Sequence:	Duration of stay (variable by owner)
Source:	Entry/Exit time records
Purpose:	Management planning, statistical information, rate analysis, revenue analysis

12)

Name:	Detailed Transaction Report
Report Frequency:	On request
Listing Sequence:	Chronological
Source:	Cashier Shift reports
Purpose:	Operational activity Audit, Cashier deposit audit

4. MSM system software shall be capable of generating all reports for individual MSM machines as well as summary reports for all machines within a facility.
5. Revenue reports shall include:
   a. Total revenue from all transactions
   b. Revenue from cash purchases of parking time
   c. Revenue from violation collections
   d. Revenue from single use pass sales
   e. Revenue from monthly pass sales
   f. Total cash in vaults
6. Activity reports shall include:
   a. Usage by time of day
   b. Usage by space number
   c. Usage by MSM machine number
   d. Usage by space number
   e. Length of stay reports
7. Violation reports shall include:
   a. Violation reports by date
   b. Violation reports by space
8. Cash collection reports shall be printed in full showing the amount collected in coins and bills with non-resettable coin and bill totals and the date and time of the previous collection.
9. Equipment Monitoring: Subsystem shall have the following characteristics:
   a. Monitor the operational status of all equipment supplied by this contract.
   b. Each of the following alarm conditions shall be immediately signaled showing the time of occurrence and the machine number:
      1) Low paper for receipt printer
      2) Coin or bill jam
      3) Full coin or bill vault
      4) Low battery or AC power failure
      5) Open door indicating access to coin or bill vaults
      6) Loss of communications to any MSM machine
      7) Tampering or door forcements
   c. A record of alarms shall be kept, including the transmission of repeated messages which may indicate possible problems with the system.
   d. Abnormal status conditions shall be flashed on all monitors and accompanied with an audible alarm. The display shall continue to flash until the abnormal condition is corrected. The audible alarm shall continue until it is turned off by a command issued through the monitoring computer(s). Acknowledgment and turning off of any alarm condition shall be able to be performed at any of the workstation connected to the FMS. It shall not be necessary to acknowledge the alarm

condition at every workstation, however FMS shall include dialer to connect remote workstations for alarm annunciation. The system shall record the abnormal status condition and the acknowledgment of the alarm condition by time, workstation and operator.

e. Monitor electrical circuits and frequency of operational error in PRCS components to identify maintenance actions which would prevent later failure of a component.

H. Computer System:

1. The FMS computer system shall consist of:
   a. Duplicate, mirrored network servers or host computers with monitors and printers located in the customer service office and utility room.
   b. Workstation with monitor, keyboard, processor and printer located in the Pierce Transit office.
   c. Subsystem Controllers and Local Controllers (LC) may be provided as necessary for the performance and operational specifications herein. Distributive, networked or centralized processing may be employed in any subsystem or the system as a whole, so long as required multi-unit control features such as payment of fees for any spaces from any station can be maintained. Subsystem controllers may include but are not limited to: FPP management, ES and vehicle Count System. Subsystem Controllers shall have, at a minimum, monitor and keyboard and shall be in the parking office.
2. Security: The FMS and all subsystem controllers shall have security protocols, password protection and reports to the exception transaction log that prevent unauthorized access to and manipulation of data and reports, including individual transactions. All data bases of transactions, FPP users, reports, etc shall be secured from unauthorized entry and tampering from either within or outside the FMS.
3. The Contractor shall furnish and install all computer hardware devices needed for the PRCS. The computer hardware configuration shall be of sufficient size and capacity to meet or exceed the functional and performance requirements as well as accommodate growth and expansion as set forth elsewhere herein. All computers shall be 32 bit microprocessors, 32 mb RAM and 1 gigabyte fast disk drive subsystems or better. Subsystem controllers shall be capable of processing all required functions as specified for each task. Performance of any specified function shall not be slowed or delayed by performance of any other function. In particular any of the workstations may be used to generate any and all reports without disruption to, or being slowed by count/occupancy monitoring or any other functions.
4. Data Storage: Transactions for the various parking areas are projected to reach the following annual volumes (including contingency for changes in distribution of parkers):

	CASH	FPP
Tacoma Dome Station Garage:	200,000	400,000

   a. All equipment provided shall be capable of dependably processing this volume of traffic.
   b. Data storage devices (hard drives) shall be in a RAID5 configuration, or better, capable of storing all data from current year plus three previous years operation.
   c. Data storage capabilities shall be based upon the traffic levels delineated above with the following data requirements for each parking transaction:
      1) Transaction Number
      2) Facility Number

3) Space Number
4) Entry Date / Day of Week / Time
5) Device Number
6) Parking Rate Structure
7) Parking Cost
8) Length of Stay
9) Transaction Type (normal, time extension citation payment, FPP)

5. Provide on-line storage solution with software and sufficient capacity to automatically back-up and store all data at the end of each day so that it is accessible from the server without manual loading of disks, tapes, etc. Provide additional storage solution, including all required hardware, to store all data from the prior calendar year so that it can be loaded into the system from a single disk, tape, etc.
6. FMS shall periodically or on demand download revenue reports in a flat ASCII file to the Owner's financial department via remote dial-up modem to the Owner's computer network.
7. All software shall have Graphical User Interface (e.g. Microsoft Windows 95 or NT 4.0).
8. Workstations shall be provided with following software for further manipulation and reporting of data.
   a. Word processing: Microsoft Word
   b. Spread sheet: Microsoft Excel
   c. Data Base: Microsoft Access
9. All printers shall be Hewlett Packard Laser Jet 5, equal, or better and shall be able to be shared by all FMS workstations.
10. FMS shall use Pierce Transit network communications protocols, (TCP/IP and IPX/SPX), and hardware standards (Intel based IBM compatible PC's/Servers).

I. Vehicle Counting System shall provide the following counting functions:
1. Every vehicular entry or exit lane from each area or zone shall serve as a counting location. Each counting location shall be equipped with two vehicle detection loops to provide directional logic at each location and shall transmit counting pulses to the FMS. Each entering vehicle shall subtract a count of one (1) from the number of available spaces. Each exiting vehicle shall add a count of one (1) to the number of available spaces. Directional logic shall be installed so that a vehicle entering an area through an entrance lane or through an exit lane shall be counted as an inbound vehicle. Vehicle exiting an area through an exit lane or through an entrance lane shall be counted as an outbound vehicle.
2. The total number of parking spaces within areas shall be field programmable. The number of available parking spaces within each area shall be tracked and displayed, upon demand, on the computer monitor(s). Anti-coincidence packages shall be provided which accurately monitors entering and exiting traffic that may occur simultaneously.
3. Each area shall have two programmable thresholds. One threshold shall be used to trigger "full status". When full status is reached the count system shall operate in one of two modes, selectable by the owner. Mode one signals an alarm and relies on human intervention to activate the appropriate dynamic signs. Mode two automatically activates the appropriate dynamic signs. The second threshold shall be used to trigger "open status". The two operating modes also applies to the open status threshold. The software shall allow for manual overriding of the "full status" of each area.
4. The VCS shall communicate with the FMS and estimate the presence of RCS and FPP

parkers present.

5. The count system shall maintain and display separate counts for each lane, and differential zone counts within the facility. System shall maintain and display:
    1) Total vehicles present
    2) Total spaces available
    3) Total vehicles at each count location
    4) Differential counts per designated time increment at each count location
6. The count subsystem shall activate any and all electronic signs, individually controlling lots, facilities or zones within lots. This includes pedestal mounted "FULL" signs, lane control lights, and exterior message lights, etc. provided by PRCS Contractor as well as dynamic signage on roadways and ramps provided by others. Full status shall be capable of being overridden from the FMS.
7. The system shall store lane, facility and zone counts at 30 minute intervals in daily files. This data will be available for specialized reports to analyze lot utilization and activity levels.

J. Citation Issuing System:
1. Citation Issuing system shall be an electronic citation writing system including hand-held data entry device, citation printer, battery pack, software and all peripherals required to operate in the manner described herein.
    a. Hand-held data entry units shall provide the following features:
        1) 4 M bytes RAM
        2) ROM as required for operating software
        3) Clock speed 8 MHz
        4) Full alphanumeric keyboard with a traditional 10 key numeric format.
        5) Four-line LCD display (60 characters each) with integral back lighting which is highly visible in daylight and darkness.
        6) Unit shall be user-friendly and ergonomically correct.
        7) A synchronous RS-232C serial communication port.
        8) Removable, rechargeable nickel cadmium battery pack with recharging unit.
        9) Battery operation for six hours between recharging.
        10) Less than 2 pound weight, including battery
        11) Waterproof against immersion in 3 ft water for 2 hours.
        12) Able to withstand 6 ft drop onto concrete surface.
    b. Citation printer shall:
        1) print legible, durable, non-fading information in format specified.
        2) be capable of printing the citation number, location, space number, violation type, amount due and due date in format coordinated with citation envelope
        3) print at 1 inch per second
        4) include synchronous RS-232C serial communication port.
        5) It shall be integral to the data entry device or belt carried.
        6) If belt carried, it shall meet the following requirements:
            a) Removable, rechargeable nickel cadmium battery pack with recharging unit.
            b) Battery operation for six hours between recharging.
            c) Less than 2 pound weight, including battery
            d) Able to withstand 6 ft drop onto concrete surface.
    c. Citation software on hand-held data entry devices shall issue citations in numbered

sequence with user definable data entry fields and a review screen that allows the officer to review the citation prior to printing and storing. Software shall allow for the correction of mistakes made during the enforcement process. Software shall include license plate check against scofflaw list. System shall control and monitor citations voided by officer.

2. ES software, independently or in concert with FMS shall:
   a. manage and compile all enforcement data
   b. provide controls over citation issuance including numbering system, void tracking, reporting of enforcement tours and productivity of officer
   c. Allow data to be electronically uploaded from hand-held issuing devices with error-checking protocol, in standard ASCII characters.
   d. Control payments of citation whether by MSM, mail or at parking office.
   e. Provide automatic generation of overdue notices.
   f. Provide for an appeals function/process during which further collection action is suspended.
   g. Provide a collection function process for monitoring tickets after turned over to collection agencies.
   h. Provide for scofflaw list for downloading to hand-held citation writers.
   i. Provide cash management reporting, which is down-loaded to FMS for consolidation with other revenue sources.

K. Intercom System:
   1. Master panel shall be provided in the parking office.
   2. Remote intercom call stations shall be furnished at all MSM machines. Stations shall include "Press for Assistance" signs and visual verification that assistance has been requested, and that assistance has been dispatched. The intercom system shall comply with current Americans with Disabilities Act requirements.
   3. The entire system shall operate without malfunction due to climatic conditions stated herein.

2.05 SUBSTITUTIONS

A. It is recognized that there are variations in equipment between manufacturers and that some manufacturers may not be able to meet all specifications in the manner specified. Others provide extra features within standard unit. With submittal of Proposal, submit letter summarizing any different approaches to providing specified features and/or any extra features that are provided as part of basic unit. This letter may be accompanied by catalog sheets, brochures, technical specifications, etc.

PART 3 EXECUTION

3.01 PROJECT COORDINATION

A. General: Meet with Owner, Engineer, and General Contractor within 30 days of contract award to verify all details of PRCS. Schedule, as related to Work done under General Contract, must be achieved with adequate time for hookup, testing, and trial period as specified herein.
B. Submittals: Provide those responsible for related work with:
   1. Installation diagrams and details for setting mounted equipment.
   2. Templates for setting mounted equipment.

3. Templates and cast-in inserts to anchor freestanding equipment to curbs and bases.
4. Electrical wiring diagrams and details.
5. Electrical installation requirements.
6. Electrical power requirements.
7. Items to be installed by others, i.e. equipment mounting templates.

C. Meetings: Meet with Owner and garage General Contractor, before any rough-in work begins, to review building plans as they relate to PRCS equipment. Explain details or precautions necessary to assure that all parking revenue collection equipment will work properly, and to determine that all required conduits and wiring are properly laid out.

D. Additional Wiring: Provide all additional conduit and wiring which is needed for total system performance but which was not noted on Contract Documents. There shall be no additional cost to Owner for these items.

3.02 INSPECTION OF WORK BY OTHERS

A. Upon written notice from Contractor that the entire work or an agreed portion thereof is complete, Owner representative(s) and Contractor shall make final inspection of Work. The Owner and/or Owner's representative will then notify the Contractor in writing of all particulars in which the Work has been found incomplete or defective. The Contractor shall immediately take such measures as are necessary to remedy such deficiencies.

3.03 INSTALLATION OF PRCS

A. Install PRCS in accordance with manufacturer's recommendations and approved Shop Drawings.
B. Installation and Start-Up: Contractor shall be responsible for installation of all control and communication wiring and Contractor supplied equipment and its interfacing and interconnection with Owner supplied equipment. The Contractor shall authorize and accept responsibility for application of power to the equipment and initiation of operation, and shall be responsible for running all initial diagnostics and system generation programs necessary to provide complete working system.

3.04 TEST AND ACCEPTANCE PROGRAM

A. General: Format for all system acceptance testing reports shall be submitted to Engineer and Owner and must be approved before acceptance of PRCS.
B. Inspections and Testing: Inspections and tests observed by Owner and Engineer shall not relieve Contractor of responsibility for providing hardware, software and documentation in accordance with this Specification.
C. Installation Test Demonstrations: Upon installation of each piece of equipment, an installation test shall be performed. This test shall exercise the equipment in accordance with specific test procedures document required in Part 1 of this Specification as well as test every function of equipment. Tests may be witnessed by an Owner's representative. The Contractor shall notify the Owner and Engineer in writing at least one week prior to each test session. In the event that first test is not successful, the Contractor shall correct noted deficiencies and notify Owner and Engineer, at least two days in advance, that test session is ready to resume. The Contractor shall promptly correct all problems encountered at the Contractor's expense. A schedule of all tests shall be submitted for Owner's review and approval. The following specific tests shall be included in installation testing:
D. Thirty-Day Operational Test and Final Acceptance: Upon completion of all installation tests, demonstrations and training required herein, Owner or its agents shall operate complete system for test period of thirty days. During this period, following performance standard must be met in order for final acceptance to be issued:
    1. All mechanical components must be operational without downtime. For each downtime period of four hours or more, one working day will be added to acceptance cycle.
    2. All electronic components must be operational without downtime or programming problems for complete monthly reporting cycle. For each downtime period of more than

one (1) hour, but less than eight (8) hours or less or programming problem that delays report cycle, one working day will be added to acceptance cycle.

3. All test reports must correlate 100% with cash receipts in each fee computer for test period.

3.05 TRAINING PROGRAM

A. The Contractor shall develop and implement a comprehensive training program for the Owner's personnel. Such training program shall be implemented through the use of formal classroom training and/or other forms of training that the Contractor shall propose. This training program shall be documented by the Contractor in a comprehensive Training Plan per Section 1.3 Submittals.

B. The curriculum shall be designed so that each group of trainees shall be trained in the full repertoire of system commands which they may have to use in the course of performing their designated functions. This training shall be accomplished through the use of lectures, visual presentations, hands-on operation of the equipment and any materials necessary to perform the job. Each student shall be provided with a complete set of training materials and operating manuals during the training session, which he/she shall retain for use on the job at the completion of training.

C. The Contractor shall conduct the required training at times and locations coordinated by the Owner. The Owner/Operator shall make personnel available to receive training. The full complement of training courses shall be conducted over a five day period, as required to accommodate shift personnel. Additional schedule for the delivery of all training courses must be included in the submittal. The training shall include, but not be limited to, the following groupings of staff (with an estimated student population as shown):

Labor Category	**No. to be Trained**	**No. of Hours Per Person**
Enforcement Officers	6	4
Supervisors/Cash Collectors	4	10
Maintenance Personnel	4	12
System Managers/Administrators	2	16

D. At the conclusion of maintenance training session(s), the Contractor shall submit to the Owner a list naming qualified Owner/Operator maintenance personnel. The list shall detail the level of maintenance/repair functions each of Owner/Operator personnel are qualified to perform.

E. Training shall consist of the following:
   1. Enforcement Officers shall be trained to operate the MSM and the ES.
   2. Supervisors: Supervisors shall be trained to:
      a. Operate the MSM, FPP and ES.
      b. Perform primary maintenance on PRCS components (trouble shoot/replenish supplies).
      c. Understand any and all system messages provided by the FMS, including but not limited to alarm messages, indications of attempts to compromise the PRCS and explanations of atypical lane activity displayed by the count system, revenue control system.
      d. Be able to understand the purpose and data contained within any and all reports

produced by the FMS.

e. Be able to operate the FMS.

3. Maintenance personnel: Maintenance personnel shall be trained to perform primary maintenance on all major components of the system. Additionally, maintenance personnel shall be trained to:
   a. Replenish all system supplies.
   b. Clear paper jams.
   c. Reset the system after a power failure.
   d. Replace internal elements such as circuit boards.
   e. Lubricate and clean internal components.
   f. Be certified by the contractor to perform primary maintenance.
   g. Perform all MSM and ES functions (only if there is a policy for cross-training maintenance personnel).
4. System Administrators: System Administrators shall have the same basic training as Supervisors. In addition to such training, System Administrators shall be trained to operate the FMS and to understand statistical reports which reveal trends in revenue generation, facility utilization, and based on information available from the FMS, to perform checks and balances over actions of Supervisors and their subordinates.

3.06 RECEIPT FORMAT

Illustrated below is the required format of receipts to be issued by the MSM. Receipts shall be inserted into GFI bills transports on GFI fareboxes, which are on all Pierce Transit buses. The MSM shall print date, amount paid and space number in the locations and fonts shown on pre-printed roll or fan fold stock. Other information printed by MSM, i.e. transaction number, time of entry, etc. may be printed elsewhere on the receipt, and in other legible typeface. All other information on receipt shall be pre-printed on the receipt stock material. Receipt should be 2-1/2" wide by 4-3/4" long. Receipt paper stock shall conform to GFI recommendations which are included as Exhibit B.

Exhibit A

END OF SECTION 11155